

What is claimed is:

1. A lipophilic microparticle having an average particle size ranging from 0.1 to 200 μm , comprising a lipophilic substance and an active ingredient selected from the group consisting of a protein or peptide drug and an antigen.

2. The lipophilic microparticle of claim 1, wherein the average particle size is in the range of 1 to 50 μm .

3. The lipophilic microparticle of claim 1, wherein the drug is selected from the group consisting of human growth hormone, bovine growth hormone, porcine growth hormone, growth hormone releasing hormone, growth hormone releasing peptide, granulocyte-colony stimulating factor, granulocyte macrophage-colony stimulating factor, macrophage-colony stimulating factor, erythropoietin, bone morphogenic protein, interferon, insulin, atriopeptin-III, monoclonal antibody, tumor necrosis factor, macrophage activating factor, interleukin, tumor degenerating factor, insulin-like growth factor, epidermal growth factor, tissue plasminogen activator and urokinase.

4. The lipophilic microparticle of claim 1, wherein the antigen is obtained from: one or more pathogens selected from the group consisting of adenovirus type 4&7, hepatitis A virus, hepatitis B virus, hepatitis C virus, influenza A & B virus, Japanese B encephalitis virus, measles virus, epidemic parotitis virus, rubella virus, polio virus, hydrophobia virus, chickenpox virus, yellow fever virus and human immunodeficiency virus; one or more pathogens selected from the group consisting of Bordetella pertussis, Borrelia burgdorferi, enterotoxigenic Escherichia coli, Haemophilus influenza type b, Mycobacterium leprae, Mycobacterium tuberculosis, Neisseria meningitidis A & C, Neisseria

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meningitidis B, Pseudomonas aeruginosa, Pseudomonas cepacia,
Salmonella typhi, Shigella spp., Streptococcus pneumoniae
and Vibrio cholerae; one or more pathogens selected from the
group consisting of Coccidioides immitis, Leishmania sp. and
5 Plasmodium sp.; or one or more pathogens responsible for the
disease selected from the group consisting of bovine
blackleg, bovine epidemic fever, bovine anthrax, bovine
Akabane's disease, bovine foot-and-mouth disease, bovine
mammitis, bovine infectious nasotracheal inflammation,
10 bovine viral diarrhea, bovine infectious gastroenteritis,
porcine cholera, porcine epidemic diarrhea, porcine atrophic
gastritis, porcine disease caused by parvovirus, porcine
enteritis caused by rotavirus, chicken Newcastle disease,
chicken Marek's disease, chicken encephalomyelitis, rabies,
15 dog distemper, dog enteritis caused by parvovirus and dog
infectious hepatitis, the antigen being an attenuated,
killed or recombinant antigen; or DNA, RNA, plasmid, CpG DNA
or oligonucleotide extracted from the pathogen.

20 5. The lipophilic microparticle of claim 1, wherein
the lipophilic substance is selected from the group
consisting of a lipid, a lipid derivative, a fatty acid, a
fatty acid derivative, a wax and a mixture thereof.

25 6. The lipophilic microparticle of claim 5, wherein
the lipid is lecithin, phosphatidylcholine,
phosphatidylethanolamine or phosphatidylserine, and the lipid
derivative is arachidoyl phosphatidylcholine or stearoyl
phosphatidylcholine.

30 7. The lipophilic microparticle of claim 5, wherein
the fatty acid is myristic acid, palmitic acid or stearic
acid, and the fatty acid derivative is glyceryl stearate,
sorbitan palmitate, sorbitan stearate, sorbitan monooleate
35 or polysorbate.

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8. The lipophilic microparticle of claim 1, which further comprises hyaluronic acid or an inorganic salt thereof.

5 9. The lipophilic microparticle of claim 8, wherein the inorganic salt of hyaluronic acid is sodium hyaluronate, potassium hyaluronate, ammonium hyaluronate, calcium hyaluronate, magnesium hyaluronate, zinc hyaluronate or cobalt hyaluronate.

10 10. The lipophilic microparticle of any one of claims 1 and 8, which further comprises a water-soluble excipient.

15 11. The lipophilic microparticle of claim 10, wherein the water-soluble excipient is selected from group consisting of a carbohydrate, a protein, an amino acid, a fatty acid, an inorganic salt, a surfactant, poly(ethylene glycol) and a mixture thereof.

20 12. A dispersion formulation prepared by dispersing the lipophilic microparticle of any one of claims 1, 8 and 10 in a lipophilic medium.

25 13. The dispersion formulation of claim 12, wherein the lipophilic medium is an edible oil, mineral oil, squalene, squalane, cod liver oil, mono-, di- or triglyceride, or a mixture thereof.

30 14. The dispersion formulation of claim 13, wherein the edible oil is corn oil, olive oil, soybean oil, safflower oil, cotton seed oil, peanut oil, sesame oil, sunflower oil or a mixture thereof.

35 15. The dispersion formulation of claim 12, wherein the lipophilic medium further comprises a dispersing agent or a preservative.

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16. The dispersion formulation of any one of claims 12 and 15, which is used for injection or oral administration.

5 17. An oil-in-water emulsion formulation comprising an aqueous injection medium and the dispersant formulation of claim 12.

10 18. The oil-in-water emulsion formulation of claim 17, wherein the aqueous injection medium is distilled water or a buffered solution.

15 19. The oil-in-water emulsion formulation of claim 17, wherein the active ingredient is an antigen and the aqueous injection medium further comprises a second antigen.

20. An aerosol formulation comprising the lipophilic microparticle of any one of claims 1 to 11.

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